REMARKS/ARGUMENTS

Applicant respectfully request Examiner's reconsideration of his rejections of the present application.

Claims 1, 3 and 4 – 21 remain pending in the present application.

Claims 1, 8, and 18 have been amended to include a limitation, "wherein the amount of nitrogen is maintained to minimize notching in the pillar structure without affecting selectivity," to better clarify this feature of Applicants' claimed invention in addressing the challenges in improving sidewall protection and to eliminate notching at the bottom of the gate electrode.

Claims 1 - 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Grimbergen et al.* (U.S. 6,081,334; hereinafter "*Grimbergen*") in view of *Witek et al.* (U.S. 5,627,395; hereinafter "*Witek*")

The §103 rejection

The Applicants request favorable reconsideration of this application in view of the following remarks. For the reasons set forth below, Applicants respectfully submit that the claims, as currently amended, are allowable over the cited references.

To reiterate, Applicants' claimed invention concerns a discovery that addresses a significant problem in the field of semiconductor processing. This problem is the notching effect described and illustrated in connection with Figure 1 of the instant patent application. Applicant's discovery is explained in detail through the original Specification, including in the Summary (beginning at page 5) and the Detailed Description (e.g., page 10, lines 4-8).

With respect to the rejection of claims 1, 3 and 4-21, Applicants respectfully submit that the rejection lacks the necessary motivation as is required when a rejection under 35 U.S.C. 103 is based on a combination of references. The Office Action acknowledges that the *Grimbergen* reference fails to teach the invention as a whole, including the using of a second plasma etch using nitrogen and HBr and that the combined teaching of the prior art fails to teach the invention as a whole. Furthermore, in

Applicants' addressing of the problem outlined *supra* including the performance of a second plasma etch using HBr and nitrogen wherein nitrogen is used in an amount less than about ten percent of the gas flow. Accordingly, the Examiner essentially has conceded that the prior art does not teach the claimed invention as a whole.

To reiterate, the Examiner continues not to recognize that with respect to the cited references, neither of the asserted references addresses Applicants' notching problem.

In an attempt to overcome these deficient prior art teachings, after reading Applicant's Specification and Applicants' discovery for addressing this notching problem, the Examiner alleges that one skilled in the art would read the *Witek* reference to modify the teaching of the *Grimberger* reference by teaching from the *Witek* patent. Having conceded that *Grimberger* does not teach using nitrogen, the Office Action asserts that *Witek* may be used to modify *Grimberger*. In reading Examiner's citation of *Witek*, "Any one of the above stated plasma environments may contain one or more inert carrier gases such as Ar, H_2, He, N_2, or a like inert carrier gas (col. 5, lines 30- 33), one skilled in the art cannot assert that "*substitution of one for the other would have been expected to provide the same function and effect of a non-reactive (inert) gas . . .*(Office Action Page 3)." One so skilled, would not merely "substitute" one gas for another even though it may be "notoriously well known". Such a substitution would have to be substantially supported by the citation. In the chemical arts (of which plasma etching is a part), Applicants' work in reducing the notching required appropriate experimentation to solve their problem. To cite references and assert that one inert gas may be substituted for another without experimentation is insufficient. Without knowledge of the problem faced by the Applicants' the modification of the cited references would require undue experimentation to achieve any degree of success."

Applicants respectfully reiterate that the present rejection is one of classic hindsight reconstruction. It is for this reason that the Court of Appeals has repeatedly indicated that there must be adequate evidence to corroborate the alleged motivation to modify the teachings of the prior art. Without such evidence, for almost every patent application based on previously known matter, the prior art could be used to reconstruct the invention claimed. The law, however, has safeguards against such Patent Office practice.

First, there must be evidence **in the cited prior art** to corroborate the alleged motivation to modify the teachings of the prior art. *See, e.g., In re Dembiczak*, 175 F.3d 994, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999), *Ruiz v. A.B. Chance Co.*, (Fed. Cir., December 6, 2000), that the alleged motivation for combining the references is to be suggested by the ***references*** ("Our court has provided [that the] motivation to combine may be found explicitly or implicitly: 1) in the ***prior art references*** themselves; 2) in the knowledge of those of ordinary skill in the art that certain ***references***, or disclosures in those references, are of special interest or importance in the field; or 3) from the nature of the problem to be solved, 'leading inventors to look to ***references*** relating to possible solutions to that problem.'").

Second, the law indicates that identification of the problem being addressed is an important part of the statutory requirement that the invention be considered "as a whole" when evaluating whether or not §103(a) applies. *See, e.g.,* §103(a), *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

Additional case law in this regard is provided in the MPEP. For example, MPEP § 2112.02 clearly states that, "The discovery of a new use for an old structure based on unknown properties of the structure might be patentable to the discoverer as a process of using." It further provides that "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the `subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. §103." MPEP § 2141.02. In this instance, Applicants have provided a clear assertion of this discovery in the specification: "it has been discovered that adding a small amount of nitrogen during the endpoint step prevents the notch without affecting selectivity." (page 5, lines 10-12) The use of nitrogen to prevent notching addresses a different objective than the endpoint identification of the cited art. Therefore, an artisan skilled in the subject matter of the *Grimbergen* reference would not pursue reducing the amount of nitrogen through routine experimentation, as claimed, since such artisan is unaware of the objective of the instant application, and therefore has no reason (motivation) to pursue this objective. Furthermore, the limitation of "wherein the amount of nitrogen is maintained to minimize notching in the pillar structure without affecting

selectivity," has been added this feature of Applicants' claimed invention in addressing the challenges in improving sidewall protection and to eliminate notching at the bottom of the gate electrode.

In view of the discussion above and the fact that Applicants' use of the nitrogen addresses a unique problem, and have included the appropriate limitation in the currently amended claims. the evidence of record adequately refutes the Examiner's position that the alleged motivation would be present. Each of the other pending claims includes related subject matter also not previously recognized by the prior art and explained in the specification, *e.g.*, at pages 10-12. For example, claim 3 is directed to about two percent of gas flow, claim 6 is directed to the use of a hardmask, claim 7 is directed to a selectivity booster; and since no mention is made regarding such aspects of the invention the necessary motivation is lacking for a *prima facie* case of obviousness.

Applicants believe they have addressed the Examiner's concerns. Therefore, the claims, as amended, are believed allowable over the cited references. Applicants respectfully request that a timely Notice of Allowance be issued in this case. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is encouraged to contact the undersigned at (408) 474-9063.

Please charge any fees other than the issue fee and credit any overpayments to Deposit Account 14-1270.

Respectfully submitted,

Date: 28-OCT-2003

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